

effective in securing an exact distribution of the chromatin. The author proposes for it the special term "syndinial mitosis," and expresses the opinion that further study of the free peridines will show that nuclear division in such forms is also of this type.—G. W. MARTIN.

Cytology of Porphyra.—Since a cytological study of the Bangiales might throw light upon the much discussed but little investigated problem as to whether this group is primitive or reduced, whether it should stand at the beginning or at the end of the red algae, ISHIKAWA³ fixed material and has described several critical stages in the life history of *Porphyra tenera*, a characteristic genus of the order.

The cell wall shows no cellulose reaction, but responds to tests for pectic substances. The large stellate chromatophore contains one conspicuous pyrenoid which has often been mistaken for a nucleus, the real nucleus (only 1.5–2 μ in diameter) being hard to detect in living material, although easy to see in well stained preparations, where it appears as a black globule with no structural differentiation. At division the nucleus elongates, and splits by longitudinal fissures into three filaments which constrict in the middle, so that three pieces go to each pole. The process looks like that described for some Cyanophyceae, especially *Synechocystis*. The figures show neither nucleolus nor nuclear membrane, so that the type appears to be very primitive. The antheridium consists of 64 or 128 cells, and the spermatium has a chromatophore and a group of three chromosomes without any nuclear membrane. The carpogonium is slightly prominent at both ends, the prominence constituting a rudimentary trichogyne. Spermatia were found attached to the trichogyne, but the actual process of fertilization was not observed, nor was there any study of the first and second divisions of the zygote. It seems reasonable, however, to suppose that reduction of chromosomes occurs during these divisions, as in many other algae.

ISHIKAWA would regard Bangiales as a connecting link between the Cyanophyceae and the Florideae, a conclusion which is helped by the fact that *Porphyridium*, a genus sometimes placed in one group and sometimes in the other, has no sexual reproduction. So far as pigments are concerned, some of the Rhodophyceae have phycocyan and some of the Cyanophyceae have phycoerythrin.

Although a careful investigation of the whole life history of several members of the Bangiales is desirable, it seems probable that any future study of the group will confirm ISHIKAWA'S conclusions.—C. J. CHAMBERLAIN.

Ecology of *Urtica dioica*.—In an interesting study of the factors which locally limit the distribution of the common nettle, *Urtica dioica*, OLSEN⁴

³ ISHIKAWA, M., Cytological studies on *Porphyra tenera*. Bot. Magazine Tokyo 35: 206-218. 1921.

⁴ OLSEN, CARSTEN, The ecology of *Urtica dioica*. Jour. Ecol. 9: 1-18. pl. 1. 1921.